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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/644,036

08/20/2003

Yu-Seock Yang

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EXAMINER

LEADER, WILLIAM T

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

01/10/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/644,036	Applicant(s) YANG ET AL.	
	Examiner William T. Leader	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/ are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 25, 2007, has been entered.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-8 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Applicant has amended independent claims 2 and 19 to recite the step of using some of the circuit patterns provided in the substrate as a first power

connection portion and some of the circuit patterns as a second power connection portion and selectively connecting the first or second power connection portion to an external power source. The scope of this limitation is not clear. The wording of the first part of the step, "using some of the circuit patterns provided in the substrate as first power connection portion and some of the circuit patterns as a second power connection portion", appears to require that at some point in the process both a first and a second power connection portion are used. However, the wording of the second part of the step, "selectively connecting the first or second power connection portion to an external power source", recites the first and second power connection portions alternatively, and requires that only one or the other be connected. There is no subsequently recited process step that requires the power connection portion not connected in this step to be connected. Thus, there appears to be an inconsistency between the recitation that both a first and second power connection portion are used, and the positive recitation in the remainder of the claim of connecting only one. When is the remaining power connection portion connected, and what is the purpose of connecting it?

6. It is noted that claim 9 clearly recites connecting first and second power connection portions. Claim 9, lines 4-5 recite the limitation "using some of the circuit patterns provided at the surface of the substrate as first and second power connection portions", similar to that added to claims 2 and 19. However, claim 9

then positively recites the use of both first and second power connection portions. Claim 9, lines 5 and 6 recite connecting the first power connection portion. Lines 9-10 recite supplying power through the first power connection portion for forming a gold-plating layer on the bonding pad. Lines 11-12 recite removing the connection to the first power connection portion. Line 13 recites connecting the second power connection portion. Lines 16-17 recite supplying power through the second power connection portion for forming a gold-plated layer on the ball pad. Lines 18-19 recite removing the connection to the second power connection portion. Thus, claim 9 makes clear how the first and the second power connection portions are used.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art combined with Japanese patent publication 2001-110939, hereinafter Hirobumi et al, in view of the text *Thin Film Technology* for the reasons of record and in view of the following comments.

9. As noted above, independent claim 9 recites using some of the circuit patterns provided at the surface of the substrate as first and second power connection portions. Independent claims 2 and 19 have been amended to recite similar limitations. Claims 2 and 19 are interpreted as requiring both first and second power connection portion be used in the process. As explained at pages 3-4 of the office action of October 6, 2006, Hirobumi et al disclose using some of the circuit patterns provided in the substrate as a first power connection portion. Claims 2 and 19 as amended differ from Hirobumi et al as does claim 9 but reciting the use of some of the circuit patterns provided in the substrate as a second power connection portion. For the reasons given at page 5 of the office action of October 6, 2006, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the process of Hirobumi et al by repeating the steps utilized to electroplate on more than one area of the substrate (for example, bonding pads and ball pads) because it is shown in the admitted prior art that more than one area (i.e., both bonding pads and ball pads) are plated to provide good electrical contact.

10. Applicant's Remarks have been carefully considered but are not deemed to be persuasive. At page 11 of the Remarks applicant maintains that previously established position that the connection described in the Advisory Action of September 18, 2007, of the conductive layer 5 to an alleged external power source

would not necessarily carry any externally supplied power along the suggested path. Applicant appears to question the use of an external power source in the process of Hirobumi et al. The process of electrodeposition is well-known and is described at pages 3-4 of the text *Thin Film Technology*. At page 4, the text explains that electrodeposition of metals involves the movement of metallic ions in solution toward a cathode in an applied electric field. A simple example of a plating cell consists of two copper electrodes immersed in an aqueous solution of copper sulfate. The electrodes are connected to an external source of direct current, and copper ions in the copper sulfate solution are attracted to the negative copper electrode or cathode. Thus, electrodeposition of a metal such as copper involves the use of an external current source. Paragraph 6) of the example of Hirobumi et al describes electroplating nickel from a Watts bath at a current density of 1 A/dm^2 with the copper connected as the cathode to produce a nickel deposit $5 \text{ }\mu\text{m}$ thick. If it is applicant's contention that the electroplating of Hirobumi et al takes place without the use of an external power source in contradiction of the conventionally accepted manner of electroplating as shown by the text, applicant is requested to provide evidence to support this contention.

11. Applicant points out that even if an external power supply were used, Hirobumi et al still only disclose the connection to and supply of power at a single point of the conductive layer 5. This is acknowledged in the rejection.

Nevertheless, as shown by the admitted prior art, it is known to plate onto more than a single area of the workpiece. It would have been obvious to have repeated the steps of Hirobumi et al which form an electrodeposit in one area to have formed an electrodeposit in another area.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WL
William Leader
December 28, 2007

Susy Tsang Foster
SUSY TSANG-FOSTER
SUPERVISORY PATENT EXAMINER